

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A power tong comprising:

(a) a ring gear having a central pipe-containing region
5 accessible through a throat opening in the side of the ring gear and having an inner surface facing such central region;

(b) a camming surface formed on the inner surface of the ring gear;

(c) twin C-shaped cage plates with outer surfaces
10 rotationally mounted with respect to the ring gear on opposite sides of the ring gear, said cage plates having a gap formed therein that is of a size and position, when aligned, that corresponds with the throat opening and central pipe-containing region in the ring gear, said cage plates being
15 free to rotate with respect to the ring gear, but being constrained to maintain a center of rotation corresponding to the center of the ring gear;

(d) pipe receiving jaw means mounted between said cage plates and positioned to receive pipe that has passed through
20 the throat in the ring gear to be positioned centrally within the ring gear;

(e) a sliding jaw assembly having upper and lower retaining portions slideably engaged with the gap in the upper and lower cage plates to maintain the sliding jaw assembly in
25 a central, position within said throat and between said cage plates, said assembly carrying a sliding jaw mounted between the upper and lower retaining portions, said sliding jaw being dimensioned to fit within and pass through the throat in the ring gear to advance to a pipe-engaging position where it will
30 bear against a pipe held in position by the pipe receiving jaw

means, the radial dimension of the sliding jaw assembly being sufficiently limited so that, once the sliding jaw advances to a pipe engaging position rotation of the ring gear becomes possible;

5 (f) a cam follower mounted within the sliding jaw assembly, positioned to contact and advance along the camming surface when the sliding jaw is in said pipe-engaging position, forcing the sliding jaw, together with the outer retaining portions of the sliding jaw assembly to move
10 inwardly within the gap in the cage plates when the ring gear is initially rotated with respect to the drill pipe and the cage plates whereby the inwardly directed force developed by the camming surface will cause the sliding jaw to bear tightly against pipe contained within the tong, thereby engaging the
15 ring gear with said pipe.

2. A power tong as in claim 1 wherein said camming surface is of minimum height adjacent to the throat, and rising to a maximum, inwardly-directed height on the inside of the ring
20 gear opposite to the throat.

3. A power tong as in claim 1 having a frame supporting the ring gear and further having a gate which is positionable to close over the outer end of the throat opening in the ring gear and further dimensioned to receive and carry the sliding
25 jaw assembly from a position within the throat to a parked position that leaves the throat exposed to receive pipe.

4. A power tong or back-up tong having a throat, a central region for receiving pipe, a ring gear with an inside surface, a camming surface on the inside circumference of the ring gear

and a sliding jaw assembly that may be advanced into the throat of the tong for positioning with said central region, said jaw assembly carrying cam following means for advancement along the camming surface to effect full engagement with the
5 well pipe when the ring gear is rotated with respect to the jaw assembly.